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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,709	08/26/2003	Richard L. Wilson	03179-PA	4059

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EXAMINER

KEYS, ROSALYND ANN

ART UNIT	PAPER NUMBER
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1621

DATE MAILED: 06/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/648,709

Applicant(s)

WILSON ET AL.

Examiner

Rosalynd Keys

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2005 and 12 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 24, 26 and 28-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 24, 26 and 28-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

1. Claims 1 and 24, 26, and 28-37 are pending.
Claims 1 and 24, 26, and 28-37 are rejected.
Claims 2-23, 25 and 27 are cancelled.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 12, 2005 has been entered.
3. Claim 37 is objected to because of the following informalities: The period after the term evaporator in line 2, should be deleted, since this is not the end of the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
5. Claim 37 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described

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in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The original disclosure does not provide support for a second reflux evaporator, as disclosed in line 2 of claim 37, nor does the original disclosure provide support for the phrase "a substantial portion", as disclosed in line the first line of step a in claim 37.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 1, 24, 26, and 28-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilson et al. (US 6,313,360) in view of Woodard (EP 0 131 561) and further in view of Kohl et al. (US 3,386,905).

Wilson et al. teach preparing a haloalkane (1,1,1,3,3-pentachloropropane) from carbon tetrachloride and an olefin (vinyl chloride) in the presence of a catalyst mixture comprising metallic iron, dissolved iron species (ferric chloride and ferrous chloride) and an organophosphate cocatalyst (tributyl phosphate) by the method steps a-d disclosed in claim 1 (see entire disclosure, in particular column 2, line 49 to column 5, line 63). The reaction temperature ranges between 175-250 F (about 79-121°C); the reaction pressure ranges from 10 to 100 psig; and the carbon tetrachloride to vinyl chloride ratio is from 1 to 3 (see Table I and

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lines 35-45 in column 3). The reactor contains an internal sedimentation tube that separates coarse particles from reactor effluent (see column 3, lines 58 to column 4, line 37). The reactor effluent is withdrawn from the internal sedimentation tube of the reactor and sent to a catalyst recovery unit (CRU) where the reactor effluent is distilled to obtain a distillate fraction containing unconverted vinyl chloride, unconverted carbon tetrachloride, 1,1,1,3,3-pentachloropropane, and trace amounts of light and heavy by-products; and a bottoms fraction containing ferric chloride, TBP, hexachloropentane isomers, 1,1,1,3,3-pentachloropropane, and high boiling point components (see column 4, lines 39-63). The majority of the 1,1,1,3,3-pentachloropropane is recovered in the flash tower distillate (see column 4, lines 51-53). The 1,1,1,3,3-pentachloropropane is further separated from the lighter and heavier compounds by distillation (see column 5, lines 32-59). The distillation fraction from the light tower contains unconverted vinyl chloride, unconverted carbon tetrachloride, and other light by-products (see column 5, lines 36-40). A portion of this light distillate may be recycled to the reaction step, thus improving feedstock conversion (see column 5, lines 40-43). The bottom fraction is continually withdrawn from the recovery unit in two streams, one for recycle and one for purge (see column 4, lines 57-63).

Wilson et al. teach the claimed invention as described above, but fail to specifically teach preparing 1,1,1,3-tetrachloropropane from carbon tetrachloride and ethylene. Thus, Wilson et al. differ from the instant claims in that a different olefin is utilized as the starting material thereby preparing a different haloalkane product. However, the starting materials are analogous in that they are both olefins, which produce analogous haloalkanes. One having ordinary skill in the art at the time the invention was made would have been motivated to employ the process of Wilson et al. with the expectation of obtaining the desired product because the ordinary skilled artisan would have expected the analogous starting materials to react similarly

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to produce the desired product. In fact, this similar reactivity is shown by Woodard, who teaches reaction of a wide variety of olefins, including ethylene and vinyl chloride, with carbon tetrachloride in the presence of a catalyst system comprising metallic iron, which includes dissolved iron, and a phosphorus compound, such as tributyl phosphate to produce the desired haloalkane product (see entire disclosure, in particular page 3, line 60 to page 5, line 34).

Wilson et al. fail to teach the specific reaction conditions and mole ratios of reactants and catalysts needed when using ethene and carbon tetrachloride. However, one having ordinary skill in the art would be able to ascertain the reaction conditions, mole ratios, and the specific haloalkane starting material needed to obtain the desired haloalkane product, based upon the teachings of Woodard and Kohl et al. In fact, Woodard teach that the optimum reaction temperature may vary with the nature of the taxogen (olefin, i.e., ethane or vinyl chloride) and telogen (carbon tetrachloride) and in the case of ethylene and carbon tetrachloride is between about 70°C and about 130°C, preferably 80°C to 125°C (see page 6, lines 50-55). The reaction pressure is disclosed by Woodard to be about 1 to about 14 atmospheres, i.e., 14.7 to 205.7 pounds per square inch (see page 6, lines 56-62). Woodard teaches that where the taxogen is highly reactive, it is preferable to maintain an excess of telogen in order to minimize formation of $n > \text{or} = 2$ telomerization products (see page 5, lines 32-34). Woodard teaches a concentration of the phosphorous compound being typically 0.05 to 20 mole percent, preferably 0.1 to 5.0 mole percent; and the ferric salt is between 0 and about 10 mole percent, depending upon the reactivity of the taxogen and its tendency to form higher telomerization products (see page 5, lines 50-53). Further, Kohl et al (see column 1, line 26 to column 3, line 30) teach reacting carbon tetrachloride and ethylene at a temperature from 60°C to 130°C; a pressure of 2 to 15 atmospheres (29.4 to 220.4 psi); at a mole ratio of from 1:1 to 10:1.

Response to Arguments

9. Applicant's arguments filed March 16, 2005 have been fully considered but they are not persuasive.

The Applicants' argue that Wilson et al. do not teach the claimed reaction temperature and pressure for preparing 1,1,1-3-tetrachloropropane. This argument is not persuasive because although Wilson et al. do not teach preparing 1,1,1-3-tetrachloropropane, the temperature and pressure range disclosed by Wilson et al. overlap with the claimed temperature and pressure range. This argument is further not persuasive because although the temperature and pressure of Wilson et al. overlap with the claimed temperature and pressure, it is the teachings of Woodard and Kohl et al. that the Examiner relies upon to show that the claimed temperature and pressure are known when using ethylene as the starting olefin, rather than vinyl chloride.

The Applicants argue that Woodard does not show the now claimed mole ratios. This argument is not persuasive because Woodard teach that it is preferable to maintain an excess of telogen (carbon tetrachloride) in order to minimize formation of $n > \text{or} = 2$ telomerization products (see page 5, lines 32-34). Thus, although Woodard does not explicitly teach the claimed ratio, it is suggested. This argument is further not persuasive because Kohl et al. teaches this limitation (see column 2, lines 22-30).

The Applicants argue that the molar feed ratio of carbon tetrachloride and ethene as disclosed in claims 1 and 28 is not taught by the prior art. The Examiner disagrees for the reasons given immediately above.

The Applicants argue that the molar feed ratio of tributylphosphate and metallic iron as disclosed in claims 29 and 30 is not taught by the prior art. This argument is not persuasive because although Woodard do not explicitly teach the claimed mole ratios, Woodard teach that

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the reaction mixture should contain an excess of the phosphorus compound with respect to the ferric compound and that one skilled in the art may readily arrive at the appropriate amount (see page 6, lines 30-37).

The Applicants argue that the molar feed ratio of dissolved iron and ethene as disclosed in claims 31 and 32 is not taught by the prior art. This argument is not persuasive because Woodard teach using the ferric salt in a proportion of between 0 and about 10 mole percent depending upon the reactivity of the taxogen (olefin) and its tendency to form higher telomerization products. Thus, the claimed molar ratio is clearly suggested by the prior art.

The Applicants argue that the bottom temperature of the reflux evaporator of claims 33 and 34 is not taught by the prior art. This argument is not persuasive because claims 33 and 34 do not contain a limitation for a reflux evaporator, nonetheless this limitation is taught by Wilson et al. at column 5, lines 17-21.

The Applicants argue that the bottom pressure of the reflux evaporator of claim 35 is not taught by the prior art. This argument is not persuasive for the same reasons given above regarding the bottom temperature.

The Applicants argue that the recycling as shown by claim 37 is not taught by the prior art. This argument is not persuasive because Wilson et al teach this limitation. (see column 4, line 54 to column 5, line 64).

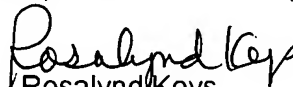
For the above reasons, the Examiner believes that a prima facie case of obviousness has been shown.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rosalynd Keys whose telephone number is 571-272-0639. The examiner can normally be reached on M and F 3:00-8:00 pm and T-TR 5:30-10:30 am.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Rosalynd Keys
Primary Examiner
Art Unit 1621

June 16, 2005